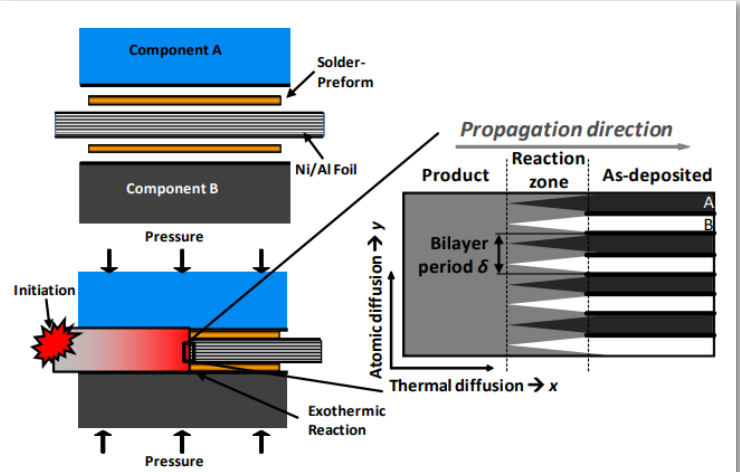
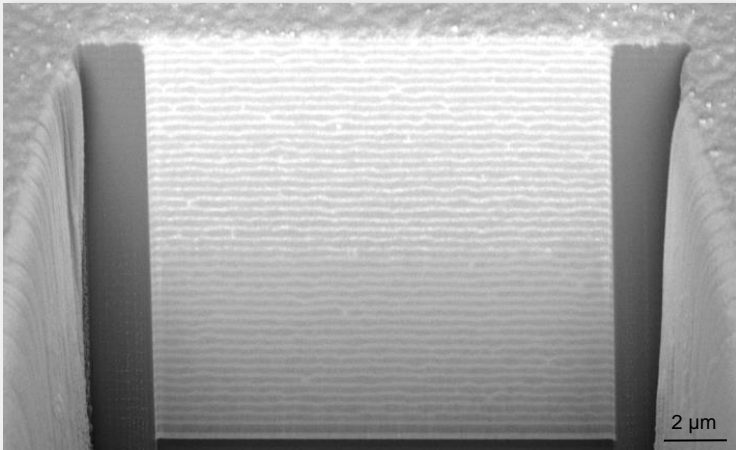


NBT develops tools for patterned deposition of **reactive multilayers (RMS)** by electroplating from two baths (e. g. Sn and Pd). RMS enable a new method of bonding at low temperature (<200°C) for encapsulation of sensitive (e. g. bioreactive or colorimetric) layers. The bond process is based on a self-propagating exothermal reaction between two metals alternating in a stack of nano-scale layers. The thermal energy lasts only milliseconds and is locally bound to the bond area.



Two bond partners are pressed together with an intermediate RMS stack. Upon an electrical pulse the reaction is initiated and propagates along the bond line fusing the metals to an alloy. The optimal bilayer period depends on the reaction partners.



Electroplated RMS stack with 40 Sn/Pd bilayers.



Ignition of Sn/Pd RMS on a ceramic substrate for bond applications.



Semi-automated tool for RMS plating. Automated wafer handling for each deposition iteration between Sn electrolyte, cleaning bath and Pd electrolyte. BMBF funded joint project ELISA (FKZ 13XP5047).

